

## CLAIMS

### WHAT IS CLAIMED IS:

1. A method for providing load information for one or more data streams within a network having a plurality of ingress routers, a plurality of core routers, and a  
5 plurality of egress routers, the method comprising:

receiving a plurality of packets into a selected ingress router, each packet belonging to a selected one of a plurality of service classes and the packets being transmitted to a particular destination;

metering a load value for each service class and the particular destination of at  
10 least one of the packets; and

periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service classes.

2. A method as recited in claim 1, wherein the destination is a selected one of the egress routers.

15 3. A method as recited in claim 1 wherein the one or more tickets indicate a total number of streams for each class that is being transmitted to the destination.

4. A method as recited in claim 3, wherein each ticket indicates a total number of streams for a particular class that are being transmitted to the destination.

5. A method as recited in claim 3 wherein each ticket indicates a single stream for a particular class that is being transmitted to the destination.

6. A method as recited in claim 3, wherein the tickets and the streams represented by the tickets are being transmitted to the same destination.

5 7. A method as recited in claim 1, wherein one or more tickets are only transmitted for a particular class when the load value has changed for such service class.

8. A method as recited in claim 1 wherein one or more tickets are transmitted after a predetermined amount of time.

10 9. A method as recited in claim 1 wherein the one or more tickets are sent to a selected core router and configured to allow the selected core router to dynamically allocate resources based on the current load of each class.

10. A method as recited in claim 9 wherein the tickets facilitate assured forward routing and differentiated services performed by the core router.

15 11. A router for providing load information for one or more data streams within a network having a plurality of ingress routers, a plurality of core routers, and a plurality of egress routers, the router comprising:

a memory; and

a processor coupled to the memory,

20 wherein at least one of the memory and the processor are adapted to provide:

receiving a plurality of packets, each packet belonging to a selected one of a plurality of service classes and the packets being transmitted to a particular destination;

metering a load value for each service class and the particular destination of at least one of the packets; and

periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service classes.

12. A router as recited in claim 11, wherein the destination is a selected one of the egress routers.

10 13. A router as recited in claim 11 wherein the one or more tickets indicate a total number of streams for each class that is being transmitted to the destination.

14. A router as recited in claim 13, wherein each ticket indicates a total number of streams for a particular class that are being transmitted to the destination.

15 15. A router as recited in claim 13 wherein each ticket indicates a single stream for a particular class that is being transmitted to the destination.

16. A router as recited in claim 13, wherein the tickets and the streams represented by the tickets are being transmitted to the same destination.

17. A method as recited in claim 11, wherein one or more tickets are only transmitted for a particular class when the load value has changed for such service  
20 class.

18. A method as recited in claim 11 wherein one or more tickets are transmitted after a predetermined amount of time.

19. A method as recited in claim 11 wherein the one or more tickets are sent to a selected core router and configured to allow the selected core router to dynamically allocate resources based on the current load of each class.

20. A method as recited in claim 19 wherein the tickets facilitate assured forward routing and differentiated services performed by the core router.

21. A computer readable medium containing programming instructions for providing load information for one or more data streams within a network having a plurality of ingress routers, a plurality of core routers, and a plurality of egress routers, the computer readable medium comprising:

computer code for receiving a plurality of packets into a selected ingress router, each packet belonging to a selected one of a plurality of service classes and the packets being transmitted to a particular destination;

computer code for metering a load value for each service class and the particular destination of at least one of the packets; and

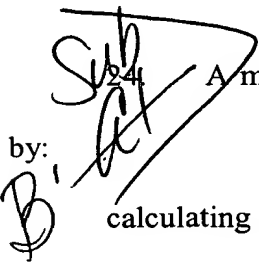
computer code for periodically transmitting one or more tickets to the destination to indicate the load value for each of the one or more service classes.

22. A method for allocating resource to one or more data streams within a network having a plurality of ingress routers, a plurality of core routers, and a plurality of egress routers, the method comprising:

receiving one or more tickets into a selected core router, the tickets indicating a total load for each one of a plurality of service classes; and

dynamically allocating resources to a plurality of streams within each service class based on the one or more received tickets.

5           23.     A method as recited in claim 22, wherein the tickets indicate a total number of streams being transmitted to the selected core router for each class.

by:  24.     A method as recited in claim 22, wherein the resources are allocated

calculating a total controlled resource allocation per class;

10           calculating a resource remainder; and

allocating the resource remainder to the streams of each class based on the calculated total controlled resource allocation for the each class.

25.     A method as recited in claim 24, wherein the total controlled resource allocation for a particular class is equal to an assigned resource allocation for each stream within the particular class times a total number of streams within the particular class and the resource remainder is equal to a total available bandwidth minus the total controlled resource allocation for all of the classes.

26.     A method as recited in claim 24, wherein a portion of the resource remainder is allocated to a particular class and the portion is proportionate to a ratio of the total controlled resource allocation for the particular class divided by the total controlled resource allocation for all classes.

27. A router for allocating resource to one or more data streams within a network having a plurality of ingress routers, a plurality of core routers, and a plurality of egress routers, the router comprising:

5 a memory; and  
a processor coupled to the memory,  
wherein at least one of the memory and the processor are adapted to provide:  
receiving one or more tickets into the router, the tickets indicating a  
total load for each one of a plurality of service classes; and  
dynamically allocating resources to a plurality of streams within each  
service class based on the one or more received tickets.

28. A computer readable medium containing programming instructions for allocating resource to one or more data streams within a network having a plurality of ingress routers, a plurality of core routers, and a plurality of egress routers, the computer readable medium comprising:

15 computer code for receiving one or more tickets into a selected core router, the tickets indicating a total load for each one of a plurality of service classes; and  
computer code for dynamically allocating resources to a plurality of streams within each service class based on the one or more received tickets.